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Squire, Sanders & Dempsey L.L.P.  
14th Floor  
801 S. Figueroa Street  
Los Angeles, CA 90017-5554

EXAMINER

MILLER, PATRICK L

ART UNIT

PAPER NUMBER

2837

DATE MAILED: 06/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/033,652

Applicant(s)

STEAD ET AL.

Examiner

Patrick Miller

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on 01 April 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☐ Claim(s) 1-25, 27 and 29-50 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-25, 27 and 29-50 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☒ Interview Summary (PTO-413) Paper No(s) 2
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other:

## **DETAILED ACTION**

### ***Priority***

1. The Examiner rejects the Applicant's *Request for Correction of Filing Receipt* because section [0001] of the specification was not properly deleted. Accordingly the Applicant's claim for domestic priority to provisional application 60/279,314 filed on March 27, 2001 is valid and accepted. This claim was verified via telephone with Sung I. Oh (45,583) on June 11, 2003 (Recorded in attached interview summary). In the response to this office action, the Applicant should clarify by stating the claim for domestic priority is not deleted, and the provisional application to which domestic priority is claimed.

### ***Response to Amendment***

2. The indicated allowability of claim 26 (now new claim 41, also pertinent to claims 30, 49, and 50) is withdrawn in view of the Examiner overlooking a portion of the Sato et al reference (5,848,173). The Examiner regrets the initial indication of allowability of the aforementioned claim.
  - Specifically, a latter portion of the Sato et al reference discloses the inner dampers made of different material (Col. 22, lines 10-24).

### ***Response to Arguments***

3. Applicant's arguments filed on 04/01/03 have been fully considered but they are not persuasive.
  - In response to the Applicant's argument on page 8 (last paragraph), the Examiner respectfully disagrees with the contention that Sato et al (5,848,173) does not disclose "a diaphragm that is free along the upper edge of the cylinder." (This feature has been

incorporated in amended claim 1.) Specifically, the Examiner has defined the cylinder to be #5 of Figure 1. Also from Figure 1, the diaphragm is coupled to the upper edge of the cylinder. (Pertinent to claim 1.)

- For examining purposes the term "free" and corresponding passage is taken to mean that the upper side of the diaphragm is not connected to anything (Sato et al reference, see Fig. 28, upper side of #8 is free).
- In response to the Applicant's argument on page 9 (third paragraph), the Examiner interprets the Sato et al (5,848,173) reference as having rolls between the cylinder and housing (one roll and additional rolls). Sato et al does not disclose **only** one roll. (Pertinent to claims 9, 34, and 44.)

#### *Claim Rejections - 35 USC § 112*

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1-8 and 49 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.
  - Claim 1 cites, "the diaphragm is free along the upper edge of the cylinder." It is unclear what the term "free" means. Referring to the specification (section [0025], lines 7-8 of sect.), the Applicant discloses, "...the edge of the diaphragm 102 may have a flat narrow

flange that is **adhesively attached** to the upper edge 318 of the cylinder 104."

Additionally, the arguments filed on 04/01/03 (beginning page 8, last paragraph), do not clarify the Applicant's position.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-6, 8-11, 13-16, 18-23, 25, 27, 29-34, 36-44, 46-49, and 50 are rejected under 35

U.S.C. 102(b) as being anticipated by Sato et al (5,848,173).

- With respect to claims 1, 9, 11, and 14, Sato et al disclose a dual sound transducer comprising: a cylinder located within a housing (Fig. 1, #7) where the cylinder has an upper edge (Fig. 1, #5 has an upper edge #8a), a diaphragm coupled to the upper edge of the cylinder [Claims 1, 14, 30, 32, 41, and 42] (Fig. 1, #8 coupled to #5 at #8a), a voice coil coupled to the cylinder [Claims 1, 11, 31, and 41] (Fig. 1, #4 coupled to #5), a first surround having inner and outer edges (Fig. 1, #6a), the first surround inner edge is coupled to the cylinder and the first surround outer edge is coupled to the housing (Fig. 1, #6a inner edge coupled to #5 and outer edge coupled to #7a), a second surround having inner and outer edges (Fig. 1, #6b), the second surround inner edge is coupled to the cylinder and the second surround outer edge is coupled to the housing (Fig. 1, #6b inner

edge coupled to #5 and outer edge coupled to bottom portion of #7a), the first and second surrounds are coupled to the cylinder between the diaphragm and the voice coil (Fig. 1, #'s 6a and 6b are between #'s 8 and 4, respectively), the first and second surrounds are separated by a predetermined distance [Claims 9 and 30] (Fig. 1, #'s 6a and 6b are separated by a distance determined by the openings #13), **the diaphragm is free along the upper edge of the cylinder (for examining purposes the term "free" is taken to mean that the upper side of the diaphragm is not connected to anything (Fig. 28, upper side of #8 is free) [claim 1], the first surround has one roll (one roll and other rolls) between the cylinder and the housing (see *Response to Arguments* section) [claim 9], and the first and second surrounds are spaced apart from each other and are made from different materials [claims 30 and 41] (Col. 22, lines 10-24).**

- With respect to claims 2, 18, 19, 33, 46, and 47, the first and second surrounds are substantially similar in shape, including symmetry (Fig. 1, #'s 6a and 6b are similar and symmetrical).
- With respect to claims 3 and 25, the first surround has a greater outer diameter than the second surround (Fig. 44, #6a has a slightly larger diameter than #6b because of the angled portion).
- With respect to claims 4 and 10, the voice coil has a pair of lead wires extending from the housing between the first and second surrounds (Fig. 54, #43 extends out of the housing to #44 between #'s 6a and 6b, respectively).

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- With respect to claims 5, 22, and 37, the first and second surrounds face up (Fig. 1, #'s 6a and 6b). The top side of the surround is interpreted to be the side to which the curved portion begins towards first.
- With respect to claims 6, 23, and 38, the first and second surrounds face downward (Fig. 1, #'s 6a and 6b). The top side (side facing downwards) is interpreted to be the side to which the curved portion *does not* begin towards first.
- With respect to claims 8, 21, and 39, the first and second surrounds face toward each other (Fig. 58, #'s 6a and 6b). The top side of the surround is interpreted to be the side to which the curved portion begins towards first.
- With respect to claim 13, the second surround is located between the first surround and the voice coil (Fig. 1, #6b is between #'s 6a and 4).
- With respect to claim 15, the cylinder has a circular cross-section. From Fig. 34, the bobbin is circular and therefore implies that the bobbin (Fig. 1, #5) has a circular cross-section.
- With respect to claims 20 and 48, the first surround is non-symmetrical to the second surround (Fig. 59, #6a is non-symmetrical to #6b).
- With respect to claims 16, 34, and 44, the first and second surrounds have multiple half-circle rolls (one roll and other rolls) (Fig. 54, half-circle rolls of #'s 6a and 6b).
- With respect to claims 27 and 36, the first and second surrounds are constructed in a sinusoidal manner, thereby making the face also sinusoidal.
- With respect to claim 29, the cylinder (bobbin) is made of a substantially rigid material (Col. 5, lines 9-16).

- **With respect to claims 49 and 50, the first and second surrounds are made of different materials (Col. 22, lines 10-24).**
6. Claims 9-12, 14-16, 18, 20, 21, 25, 27, and 29, are rejected under 35 U.S.C. 102(e) as being anticipated by Peng (6,526,151).
- Peng discloses a transducer comprising: a cylinder (Fig. 3, #30) within a housing (Fig. 3, #10 and 42), where the cylinder has an upper edge (Fig. 3, upper edge of #30 that abuts #41); a first surround having one roll between the cylinder and the housing (Fig. 3, #40; since #30 extends above #42, #40 is between #30 and #42), where the first surround is coupled to the cylinder and the housing (Fig. 3, #40 to #30 and #42); a second surround between the cylinder and the housing (Fig. 3, #15), where the second surround is at a predetermined distance [claim 9]; a lead wire running between the first and second surrounds (Fig. 3, wires (not labeled) enter between #40 and #15) [claim 10]; a voice coil coupled to the cylinder (Fig. 3, #31) [claims 11]; the voice coil is located between the first and second surrounds (Fig. 3, #31 between #40 and #15) [claim 12]; a diaphragm coupled to an upper edge of the voice coil (Fig. 3, #41 to #31 via #30) [claim 14]; the cylinder has a circular cross-section (Fig. 2, speaker is circular) [claim 15]; the first and second surrounds have a half-circle roll (Fig. 3, #40 and #15 have half rolls) [claim 16]; the first surround is substantially similar to the second surround (Fig. 3, #40 and #15 are similar) [claims 18]; the first surround is non-symmetrical to the second surround (Fig. 3, #15 is smaller than #40) [claim 20]; the first surround has a roll that faces up and the second surround has a roll that faces down (Fig. 3, #40 up, #15 down) [claim 21]; the second surround has a smaller outer diameter than the first surround (Fig. 3, #15 smaller



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than #40) [claim 25]; the first and second surround have a sinusoidal face (half-circle taken to be sinusoidal) [claim 27]; and the cylinder is made of a substantially rigid material (Fig. 3, #30 implied rigidity) [claim 29].

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 7, 24, and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato et al as applied to claims 1, 9, and 30 above, and further in view of Perkins (6,176,345).

- Sato et al teach all of the limitations of claims 1, 9, and 30 above, but with respect to claims 7, 24, and 40, do not disclose the first and second surrounds facing away from each other.
- Perkins discloses a radiator with two surrounds, and the surrounds face away from each other (Fig. 3, #88 and 90 face away from each other). Perkin's motivation for facing the surrounds away from each other is so non-linear restoring forces are canceled out (Col. 6, lines 66-67). This provides the advantage of canceling non-linear forces, which are generally more complicated to control and reduce.
- Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the transducer of Sato et al by making the first and second surrounds face away from each other, thereby providing the advantage of canceling non-linear forces, as taught by Perkins.

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8. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sato et al as applied to claims 9 and 11 above, and further in view of Kohara et al (5,511,131).

- Sato et al teach all of the limitations of claims 9 and 11 above, but with respect to claim 12, do not disclose the voice coil located between the first and second surrounds.
- Kohara discloses a loudspeaker with a voice coil located between the first and second surrounds (Fig. 3, #55 is located between 61A and 61B). The motivation for positioning the voice coil as stated above, is to provide the advantage of enhancing the low frequency zone characteristics (Col. 4, lines 43-53).
- Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the transducer of Sato et al by positioning the voice coil between the first and second surrounds, respectively. This produces the advantage of enhancing the low frequency zone characteristics, as taught by Kohara et al.

9. Claims 17, 35, and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato et al as applied to claims 9, 30, and 41 above, and further in view of White (3,997,023).

- Sato et al teach all of the limitations of claims 9, 30, and 41 above, but with respect to claims 17, 35, and 45, do not disclose the first and second surrounds have a substantially parabolic cross-sectional roll.
- White discloses a surround that has a parabolic cross-section (Fig. 3). White's motivation for using a surround that has a parabolic cross-section is because this configuration provides the arched portion of the surround with relatively steep sidewalls, as compared with a semi-circular arch. This provides the advantage of offering a high resistance to shear stresses and, if effective in suppressing or attenuating undesirable

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circumferential or peripheral waves (Col. 2, lines 12-26). Further, although White only discloses one surround, a person of ordinary skill in the art would realize that both diaphragms in the transducer of Sato could be configured with parabolic surrounds.

- Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the transducer of Sato et al by implementing parabolic cross-section surrounds, thereby providing the advantage of suppressing or attenuating undesirable circumferential or peripheral waves, as taught by White.

10. Claim 30, 32-34, 36, 39, and 40-44, 45, 46, and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Peng (6,526,151) in view of Sato et al (5,848,173).

- Peng discloses a dual surround transducer assembly, comprising: a first surround connecting a cylinder with a housing (Fig. 3, #40 to #30 and #42); a second surround connecting the cylinder with the housing (Fig. 3, #15 to #30 and #10); and the first and second surrounds are spaced apart from each other (Fig. 3 space between #40 and #15).
- Peng does not disclose the first and second surrounds being made from two different materials (claims 30 and 41).
- Sato et al discloses two surrounds (dampers) that are made of two different materials. The motivation to do such is make the two surrounds of the same compliance. This provides the advantage of maintaining inner structure balance (Col. 22, lines 10-24).
- Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the assembly of Peng so the surrounds are made from two different materials, thereby providing the advantage of maintaining structure balance, as taught by Sato et al.

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- With respect to claims 32 and 43, Peng discloses a diaphragm coupled to an upper edge of the cylinder (Fig. 3, #41 to #30).
- With respect to claims 33 and 46, the first and second surrounds are substantially similar (Fig. 3, #40 similar to #15).
- With respect to claims 34 and 44, the first and second surrounds have one half-circle cross-section roll (Fig. 3, #40 and #15 have half-circle rolls).
- With respect to claim 36, the first and second surrounds have a sinusoidal face (Fig. 3, half-circle rolls are interpreted as sinusoidal).
- With respect to claim 39, the two surrounds face each other (concave sides face each other).
- With respect to claim 40, the two surrounds face away from each other (protrusions face away from each other).
- With respect to claim 42, a voice coil is coupled to the cylinder (Fig. 3, #22 to #30).
- With respect to claim 48, the first and second surrounds are non-symmetrical (Fig. 3, #15 has a smaller diameter than #40).

11. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Peng as applied to claim 9 above, and further in view of White (3,997,023).

- Peng teaches all of the limitations of claim 9 above, but with respect to claim 17, does not disclose the first and second surrounds have a substantially parabolic cross-sectional roll.
- White discloses a surround that has a parabolic cross-section (Fig. 3). White's motivation for using a surround that has a parabolic cross-section is because this configuration provides the arched portion of the surround with relatively steep sidewalls.

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as compared with a semi-circular arch. This provides the advantage of offering a high resistance to shear stresses and, if effective in suppressing or attenuating undesirable circumferential or peripheral waves (Col. 2, lines 12-26). Further, although White only discloses one surround, a person of ordinary skill in the art would realize that both diaphragms in the transducer of Peng could be configured with parabolic surrounds.

- Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the transducer of Peng by implementing parabolic cross-section surrounds, thereby providing the advantage of suppressing or attenuating undesirable circumferential or peripheral waves, as taught by White.

12. Claims 35 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Peng and Sato et al as applied to claims 30 and 41 above, and further in view of White (3,997,023).

- Peng and Sato et al teach all of the limitations of claims 30 and 41 above, but with respect to claims 35 and 45, do not disclose the first and second surrounds have a substantially parabolic cross-sectional roll.
- White discloses a surround that has a parabolic cross-section (Fig. 3). White's motivation for using a surround that has a parabolic cross-section is because this configuration provides the arched portion of the surround with relatively steep sidewalls, as compared with a semi-circular arch. This provides the advantage of offering a high resistance to shear stresses and, if effective in suppressing or attenuating undesirable circumferential or peripheral waves (Col. 2, lines 12-26). Further, although White only discloses one surround, a person of ordinary skill in the art would realize that both

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diaphragms in the transducer of Peng and Sato et al could be configured with parabolic surrounds.

- Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the transducer of Peng and Sato et al by implementing parabolic cross-section surrounds, thereby providing the advantage of suppressing or attenuating undesirable circumferential or peripheral waves, as taught by White.

*Conclusion*


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick Miller whose telephone number is 703-308-4931. The examiner can normally be reached on M-F, 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Nappi can be reached on 703-308-3370. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-3431.

Patrick Miller  
Examiner  
Art Unit 2837

pm  
June 11, 2003

  
ROBERT E. NAPPI  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800